Abstract Submitted to the
International Conference on Strongly Correlated Electron Systems
University of Michigan, Ann Arbor
August 6-10, 2001

Specific Heat around Metal-Insulator Transition of Filled Skutterudite $PrRu_4P_{12}$

Kazuyuki Matsuhira[1], Yukio Hinatsu[1], Chihiro Sekine[2], Ichimin Shirotani[2]

[1] *Divisoin of Chemistry, Graduate School of Science, Hokkaido University, Sapporo 060-0810, Japan*

[2] *Department of Electrical and Electronic Engineering, Muroran Institute of Technology, 27-1, Mizumoto, Muroran 050-8585, Japan*

Filled skutterudite $PrRu_4P_{12}$ has been attracting much interest because it exhibits a metal-insulator (M-I) transition at $T_{\rm MI}$ $\sim$62 K. Recent observation of superlattice spots below $T_{\rm MI}$ and a study of band calculations give a new scenario for the mechanism of M-I transition, which the opening of band gap is due to a nesting of Fermi surface. We have measured in detail the specific heat $C(T)$ of filled skutterudite $PrRu_4P_{12}$ around M-I transition in order to attempt the analysis of specific heat in terms of CDW transition. A specific heat anomaly with a jump $\sim$ 10 J/K mole is observed at M-I transition. In comparison with the anomaly expected in weak coupling limit of BCS theory, the anomaly observed at $T_{\rm MI}$ is shaper and larger. If the M-I transition of $PrRu_4P_{12}$ is due to CDW transition, a strong coupling transition of second order is suggested. Much below $T_{\rm MI}$, we found the existence of bump in $C(T)$ around 30 K. The origin of the bump around 30 K is discussed.